

CHAPTER IV

Effects of Air Attack on the Population

The vulnerability of the Japanese people to air attacks was never a primary consideration in basic Allied strategy. The Theater Air Command, however, while selecting urban targets primarily on the basis of their economic value, anticipated that, apart from the economic results of those raids, the impact of mass bombing on the people would seriously undermine the enemy's ability to continue the war. These effects are dealt with, in detail, in the reports of the Morale Division of the Survey. They are of interest here insofar as they are important to the discussion of the economic effects of bombing.

Generally speaking, the urban attacks resulted in a serious and widespread collapse in public morale which was reflected in all phases of the Japanese war economy.

Perhaps the most significant result of the raids on the general population was the spreading of the conviction that continued resistance to the Allied strength was futile. Particularly, the extension of the bombing program to the smaller cities convinced the people that the

Allied aircraft could, and would, destroy every city in Japan. Furthermore, they were made painfully aware of the impotence of their government which could do nothing to prevent the wholesale destruction, or minimize its effects.

The mass flight of people from the bombed cities was virtually uncontrolled. The population of Tokyo city dropped 63 percent during the raid period. Official estimates of the number of evacuees from the huge Tokyo-Kawasaki-Yokohama complex, accounting for 11 percent of the total population, were placed at around 4.6 million or 58 percent of the preraid population. After the two devastating air raids on Nagoya in mid-March, 317,000 people, or 29 percent of the preraid population fled from the city. When the war ended, less than 50 percent of Nagoya's population remained. Although no official figures on the total number of evacuees was obtainable, the Morale Division of the Survey, on the basis of its investigation, estimated the number to have been in excess of the official figure of 8½ million.

Table 5 summarizes the physical effects of the raids on the people in 66 cities:

TABLE 4.—Total tonnage dropped in urban area attacks of 100 tons or over (includes HE, IB and fragmentation)

	1944 November	1944 December	1945 January	1945 February	1945 March	1945 April	1945 May	1945 June	1945 July	1945 August
1. Akashi									975	
2. Amagasaki								1,773		
3. Aomori									547	
4. Chiba									889	
5. Choshi									629	
6. Fuku									954	
7. Fukuoka								1,526		
8. Fukuyama										556
9. Gifu									898	
10. Hachioji										1,504
11. Hamamatsu							348	1,486		
Hamamatsu								918		
Hamamatsu										
12. Himeji									768	
13. Hiratsuka									1,163	
14. Hiroshima										1
15. Hitachi									964	
16. Ichinomiya									1,640	
17. Imabari										510
18. Iseaki										614
19. Kagoshima						166				
Kagoshima							810			
20. Kawasaki						1,504				

D.O. 2530

No. 2

TABLE 4 (Continued)

	1944 November	1944 December	1945 January	1945 February	1945 March	1945 April	1945 May	1945 June	1945 July	1945 August
21. Kobe				174						
Kobe					2,331					
22. Kochi								3,081		
23. Kofu									1,061	
24. Kumagaya									971	
25. Kumamoto										593
26. Kure									1,114	
27. Kuwana									1,082	
28. Maebashi									1,511	
29. Matsuyama										724
30. Mito									896	
31. Moji										1,145
32. Nagaoka								626		
33. Nagasaki										925
34. Nagoya			152							
Nagoya					3,655					
Nagoya							2,516			
Nagoya							3,609			
35. Noboroka								829		
36. Numazu									1,036	
37. Ogaki									659	
38. Oita									790	
39. Okayama								982		
40. Okazaki									851	
41. Omuta								770		
Omuta									965	
42. Osaka					1,733					
Osaka							2,789			
Osaka								3,980		
43. Sakai									779	
44. Saga										458
45. Sasebo								1,060		
46. Sendai									912	
47. Shimizu									1,010	
48. Shimonoseki									833	
49. Shizuoka								869		
50. Takamatsu									853	
51. ¹ Tokushima									1,051	
52. Tokuyama									751	
53. Tokyo				457						
Tokyo					1,667					
Tokyo						129				
Tokyo							6,900			
Tokyo						769				
54. Toyama										1,465
55. Toyohashi										
56. Tsu								946		
Tsu								102		
57. Tsuruga									1,308	
58. Ube									679	
59. Ujiyamada									715	
60. Utsunomiya									735	
61. Uwajima									803	
62. Wakayama									1,077	
63. Yawata									801	
64. Yokkaichi										1,301
65. Yokohama								567		
Total Tons			152	631	9,386	2,916	20,680	18,029	32,670	9,886
Percent of Total			.2	.7	9.9	3.1	21.9	19.1	34.6	10.5

¹ Atomic bomb.

Tons dropped on sample cities—65,030 or 69 percent.

NOTE—Miyakonojo: 158 tons of H. E. on urban area raid in May 1945.

Total January 1945–August 1945 = 94,350 dropped only in urban raids.

SOURCE—The Air Attacks in the Pacific—U. S. Strategic Bombing Survey Report No. 5-B.

TABLE 30.—Pre-raid and Post-raid Data—Japanese Urban Areas

	Pre-raid Data			Bomb Damage				Post-raid Data									
	Popula- tion 1944 (in 1,000's)	Percent all cities	Percent national popula- tion	Built-up area Square miles	Percent all cities	High explosive	Incen- dinary bombs	Fragnen- tation	Total	Percent dropped in urban attacks	Popu- lation after raids (in 1,000's 1 Nov. 1945)	Number Killed	Number Injured	Number Deceased (in 1,000's)	Area destroyed square miles	Percent pre-raid	Build- ings des- troyed
Tokyo	6,578	31.5	21.8	110.80	27.0	1,586	12,303	24	14,003	68	2,777	93,056	72,840	2,891	56.30	50.8	727,655
Osaka	2,843	13.6	10.5	59.80	14.5	3,431	7,654	131	11,216	68	1,103	9,915	31,088	1,099	15.54	76.0	334,201
Nagoya	1,449	6.5	4.8	39.70	9.7	4,049	10,603	18	14,670	68	598	8,152	10,095	495	12.37	31.2	123,179
Yokohama	1,035	5.0	3.6	20.20	5.4	20	2,580	1	2,601	100	625	4,832	17,968	400	8.90	44.0	98,970
Kobe	919	4.4	3.3	15.70	3.8	516	5,491	135	6,142	89	379	6,887	16,167	443	8.75	56.0	115,895
Kawasaki	581	1.8	1.4	11.30	2.7	2,594	1,098	20	3,712	30	180	1,520	8,759	155	3.70	32.8	35,114
Hiroshima	343	1.6	1.3	6.50	1.7	7	0	0	7	(*)	137	21,379	68,023	200	4.70	68.5	61,825
Kure	339	1.6	1.2	3.26	1.8	885	1,082	19	1,966	55	152	1,967	702	12	1.30	40.0	22,306
Fukuoka	376	1.5	1.2	6.56	1.6	0	1,526	0	1,526	100	252	953	1,079	57	1.37	31.5	14,104
Nagasaki	272	1.3	1.0	3.30	1.8	309	53	20	382	(*)	143	13,294	29,739	121	1.45	43.9	12,881
Amagasaki	270	1.3	1.0	6.90	1.7	1,856	1,775	0	3,629	49	153	411	976	44	1.76	11.0	11,155
Sakai	221	1.1	.8	2.32	.6	0	779	0	779	100	168	1,411	1,501	57	1.02	44.0	14,751
Kumamoto	212	1.0	.8	4.80	1.2	110	1,491	22	1,623	69	181	583	1,310	47	1.00	21.0	11,486
Shizuoka	212	1.0	.8	3.46	.8	349	924	4	1,277	77	162	1,952	6,270	127	2.28	66.0	31,355
Shimonoseki	207	1.0	.8	1.42	.3	2	837	0	837	100	156	241	505	41	.51	36.0	9,224
Wakayama	206	1.0	.7	4.00	1.0	36	854	0	890	88	148	1,625	4,675	125	2.10	52.5	25,353
Omura	180	.9	.7	5.37	1.3	68	1,735	0	1,803	95	128	780	1,571	55	2.27	42.5	11,083
Gifu	176	.8	.6	2.60	.6	0	898	0	898	100	143	818	1,059	0	1.93	74.0	20,303
Hamamatsu	163	.8	.6	4.24	1.0	2,032	1,056	3	3,091	29	81	2,947	1,702	124	2.97	70.0	23,810
Okayama	162	.8	.6	3.38	.8	4	982	0	986	100	92	1,745	975	105	2.13	65.0	25,203
Moji	135	.6	.5	1.12	.3	1	626	0	627	100	94	161	260	20	.33	26.9	3,891
Nishinomiya	127	.6	.5	9.46	2.3	34	1,923	47	2,004	100	91	749	442	56	3.50	37.0	0
Chiba	111	.5	.4	1.98	.5	147	860	33	1,040	85	97	856	1,205	41	.86	43.4	8,102
Himeji	104	.5	.4	1.92	.5	351	768	0	1,119	69	83	514	510	55	1.47	71.7	11,513
Obi	82	.4	.3	2.20	.5	21	824	0	845	94	66	177	270	13	.55	25.2	2,916
Okazaki	80	.4	.3	.95	.2	0	851	0	851	100	76	151	129	32	.65	68.0	8,287
Akashi	79	.4	.3	1.42	.3	642	975	0	1,617	60	46	1,421	171	58	.90	63.5	10,966
Hachioji	78	.4	.3	1.40	.3	0	1,594	0	1,594	100	63	290	70	74	1.12	80.0	12,895
Shimizu	78	.4	.3	1.41	.3	59	1,042	0	1,101	91	60	351	403	33	.74	52.0	8,454
Ichinomiya	66	.3	.2	1.28	.3	0	1,640	0	1,640	100	58	648	682	41	.97	76.0	10,468
Osaki	57	.3	.2	1.20	.3	5	659	0	664	100	51	61	124	0	.48	40.0	4,762
Hiratsuka	50	.2	.2	2.35	.6	46	1,163	2	1,211	96	39	228	292	31	1.04	44.2	7,217
Kurama	43	.2	.2	.82	.2	818	693	0	1,511	100	29	421	372	0	.63	77.0	6,223
Tsuruga	31	.1	.1	1.13	.5	11	683	0	694	99	23	161	340	21	.77	68.0	4,098

TABLE 30 (2)

Percent Data										Bomb tonnage										Post raid data									
Popu- lation 1944 (in 1,000's)	Percent all cities	Percent 66 cities	Percent national population	Percent 66 cities	High explosive	Incen- dary bombs	Fragment- ation	Total	Percent dropped in urban area	Number Killed	Number Injured	Number Destroyed (in 1,000's)	Area destroyed (in square miles)	Percent destroyed	Percent injured	Percent destroyed	Percent injured	Build- ings de- stroyed	Build- ings de- stroyed										
265	1.2	1.2	4	9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2										
264	1.2	1.2	4	9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2										
253	1.1	1.1	3	9	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1										
190	9	9	2	7	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9										
161	8	8	2	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8										
141	7	7	2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7										
137	7	7	2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7										
124	6	6	2	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6										
121	6	6	2	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6										
116	6	6	2	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6										
107	5	5	1	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5										
106	5	5	1	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5										
100	5	5	1	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5										
100	5	5	1	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5										
91	4	4	1	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4										
85	4	4	1	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4										
76	4	4	1	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4										
73	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3										
67	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
66	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
65	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
63	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
58	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
57	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
54	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
52	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
51	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
49	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
43	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
40	2	2	1	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
20,892	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100										

NOTE: In compiling these tables, figures from the investigations conducted by the Urban Areas Division have been used wherever possible, as they were in most cases collected and checked at source. It should be observed that certain of the entries, particularly for killed, injured, buildings destroyed and persons debauched may be slightly at variance with those submitted by other divisions of the Survey. It was in these categories that the Japanese were themselves most at variance. The differences, however, are not serious, and in any case where a definite question

arose, the limiting factors were duly considered and a plausible choice made. Attention is specifically called to the following: Bomb tonnage represents total weight of bombs, incendiary explosive, high explosive, and fragmentation, dropped over urban areas; figures for built-up areas are taken from the Twentieth Air Force records; post raid population figures are taken from the national census of November 1945; and buildings destroyed are listed in a rough, comprehensive figure comprising residential, industrial and others, the only figure which was uniformly available.

ADDITIONAL PAGES

Def. Doc. # 2530



Please attach the following additional pages to the document distributed before.

Front Page

Page Nos 3 & 4 -- add between former page 2 & 3

EXHIBITS
THE UNITED STATES
STRATEGIC BOMBING SURVEY

THE EFFECTS
OF
AIR ATTACK
ON
JAPANESE URBAN ECONOMY

SUMMARY REPORT

Urban Areas Division
March 1947

TABLE 5.—Damage to urban areas

Total built-up area	square miles	411
Target area	do	192
Area destroyed	do	178
Total population		21,928,000
Bombs dropped (74 percent incendiary)	tons	121,458
Buildings destroyed		2,094,374
Persons killed		252,769
Persons injured		298,650
Persons rendered homeless		8,324,000
Planned evacuations		2,100,000

¹ Operational summary, Twentieth Airforce. Refers only to 66 cities which were targets of planned urban area missions.

² 43 percent total built-up area for 66 cities.

A table of measurable damage cannot fully reflect the impact of the raids on the people. The number of people rendered homeless presented an almost insurmountable problem. National and local organizations which had been set up to care for the victims were largely ineffectual because of the magnitude of the disaster. The vast majority of bombed-out residents were, as a result, thrust upon their own resources either to improvise shelter on or near the site of their former homes or to move elsewhere. The preraid evacuation program succeeded in moving a small part of the population out of the cities but postraid evacuation was curtailed by reduced transportation facilities. Most people left the city on foot, carrying with them the remnants of their possessions. The destruction of food stocks and distribution

centers in the cities, complicated by the uncharted movements of evacuees, seriously aggravated an already critical food situation. The breakdown of the official rationing system and the curtailment of factory food rations caused by the destruction of plants forced refugees and remaining residents more and more to the black markets, not only for food but for all goods. War risk insurance payments for destroyed homes, and end-of-employment bonuses, which were paid to workers when their factories were destroyed, stimulated the inflation.

When it is considered that not only were the residents in 66 cities directly affected by bombing but that the residents of an additional 100 communities also suffered from the effects of precision bombing raids, accidental bombings, reconnaissance aircraft unloadings, and other unplanned attacks, it is understandable that, according to the findings of the Morale Division, over 40 percent of a large sample of the Japanese people in both urban and rural communities expressed themselves as most satisfied at the end of the war because of the cessation of air raids.

The Morale Division's survey further indicated that of all the gainfully employed people who evacuated their homes, 37 percent had been engaged in war industry. Only 25 percent of the workers among the urban non-evacuees were in war production. Of the war workers who evacuated the cities, only 4 percent left because their factories were moved; the rest either abandoned their jobs or left because of

TABLE 6.—Comparative table of pre-raid importance and effects of bombing on the six largest cities

	Tokyo, Kawasaki, Yokohama	Kobe, Osaka	Nagoya	Total 6 cities	Total 66 cities	Total all Japan	Percent 6 cities 1: 66 cities	Percent 6 cities all Japan	Percent 66 cities all Japan
<i>Importance</i>									
Area (square miles)	429	125	56	610		147,707		0.4	
Population: 1940	8,048,000	4,221,614	1,260,000	13,529,614		73,114,000		18.5	
February 1944	7,994,000	5,762,000	1,349,000	13,105,000	21,928,000	72,664,000	59.8	18.0	30.2
Total labor force February 1944	3,559,321	1,227,200	549,000	5,335,521		31,334,838		16.9	
Industrial labor force February 1945	1,483,140	613,600	362,000	2,460,840		9,494,424		26.5	
B/U area (square miles) ²	142	75.50	40	257.5	411		62.6		
<i>Effects of Bombing</i>									
Total bomb tonnage ³	20,316	17,358	14,670	52,344	121,438	159,744	45.1	32.8	76.0
Percent B/U area destroyed	49	32.6	31	47	43				
Area of destruction (square miles)	70	24.68	12.4	107.0	178		60.1		
Number buildings destroyed	861,600	490,000	125,100	1,474,700	2,094,374	2,350,000	70.4	65.3	93.1
People deboused	3,446,000	1,542,000	495,000	5,483,000	5,324,000	8,740,000	65.0	62.7	95.2
People killed	99,408	16,802	8,132	124,362	252,769	299,360	49.2	41.5	84.4
People injured	99,567	47,255	10,093	156,917	298,650	432,872	52.5	36.2	89.0
Total casualties	198,975	64,057	18,247	281,279	551,419	732,232	51.0	38.4	75.5
November 1945 population	3,582,000	1,482,000	598,000	5,662,000	11,279,000	71,996,000	50.2	7.9	15.7

¹ Planned urban attacks.

² Twentieth Air Force estimates.

³ May 1945.

⁴ November 1944.

⁵ CI, Civilian Defense Report.

the destruction of their plants. The latter group seldom sought or heeded official pleas for reemployment. The evacuations resulted in a substantial loss of workers and a sharp increase in absenteeism among those who continued to work. A more detailed discussion of the problems affecting the industrial labor force in the urban economy is presented in a later chapter.

A report on the general impact of the urban attacks was written at the direction of this division by the combined faculties of the Tokyo Imperial University. Of several reports on this topic written for the division by Japanese sources, the University's report reflects the most careful and objective preparation. It is included in its entirety as Appendix B.